

Commissioner for Patents
United States Patent Application No. 10/812,446

Amendments to the Claims:

This listing of the claims replaces all prior versions, and listings, of the claims in this application.

LISTING OF CLAIMS

1. (Currently amended) A wellhead system for stimulating and extracting subterranean hydrocarbons from a low-pressure well, the system comprising:

a plurality of tubular heads, each tubular head having side ports and supporting a mandrel for suspending a tubular string in the well, each mandrel being secured to the tubular head that supports it ~~the mandrel~~ by a threaded union, and each mandrel supporting one of:

a ~~one of~~ said tubular heads head which is secured by a threaded union to the mandrel that supports it; ~~or the tubular head, and~~

an adapter flange for connecting production equipment to the wellhead system, the adapter flange being secured to the mandrel that supports it ~~the adapter flange~~ by another threaded union.
2. (Previously presented) The wellhead system as claimed in claim 1 comprising two of said tubular heads separated by one of the mandrels, the one of the mandrels being supported by a first of said tubular heads and the one of the mandrels supporting a second of said tubular heads.
3. (Original) The wellhead system as claimed in claim 1 wherein each threaded union comprises a nut.
4. (Previously presented) The wellhead system as claimed in claim 3 wherein the nut comprises one of: a wing nut, and a spanner nut.

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5. (Original) The wellhead system as claimed in claim 1 wherein the tubular strings suspended by the mandrels are concentrically disposed within a surface casing suspended by a wellhead, the wellhead being supported by a conductor assembly dug into the earth.
6. (Previously amended) The wellhead system as claimed in claim 1 comprising:
 - a casing mandrel supported by a wellhead and secured to the wellhead by a threaded union, the wellhead securing and suspending a surface casing, the casing mandrel securing and suspending a production casing;
 - a tubing head spool supported by the casing mandrel and threadedly secured to the casing mandrel by a pin thread and a threaded union; and
 - a tubing hanger secured to the tubing head spool by a threaded union, the tubing hanger securing and suspending a production tubing.
7. (Previously presented) The wellhead system as claimed in claim 6 further wherein an adapter flange is threadedly secured to the tubing hanger by a pin thread and a threaded union, the last-mentioned adapter flange having an upper flange for connecting to a flow-control device.
8. (Previously presented) A low-pressure wellhead system comprising:
 - an independent screwed wellhead having independently secured tubular heads, each independently secured tubular head having side ports, and each independently secured tubular head supporting a respective mandrel that supports and suspends a respective tubular string in a well bore; and
 - a respective threaded union for threadedly securing each of the respective mandrels to the independently secured tubular head that supports it, at least one the mandrels supporting one of the independently secured tubular heads, which is independently secured to that mandrel by another threaded union.

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9. (Previously amended) The wellhead system as claimed in claim 8 comprising a first tubular head threadedly secured to a surface casing of the wellhead system and a second tubular head, a first mandrel supported by the first tubular head and supporting the second tubular head and a second mandrel supported by the second tubular head.
10. (Previously amended) The wellhead system as claimed in claim 9 wherein:
the first tubular head is a wellhead supported by a conductor assembly, the wellhead securing and suspending a surface casing in the well bore;
the first mandrel is a casing mandrel supported by the wellhead, the casing mandrel securing and suspending a production casing in the well bore;
the second tubular head is a tubing head spool supported by the casing mandrel, the tubing head spool supporting the second mandrel at an upper end thereof; and
the second mandrel is a tubing hanger supported by the tubing head spool, the tubing hanger securing and suspending a production tubing in the well bore.
11. Cancelled.
12. (Previously presented) The wellhead system as claimed in claim 10 wherein the threaded unions comprise one of: a wing nut, and a spanner nut.
13. (Original) A method of completing a low-pressure well comprising steps of:
securing a first mandrel to a first tubular head using a first threaded union, the first tubular head supporting a first tubular string in the well, and the first mandrel supporting a second tubular string in the well;
securing a second tubular head to the first mandrel using a second threaded union; and
securing a second mandrel to the second tubular head using a third threaded union, the second mandrel supporting a third tubular string in the well.

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14. (Original) The method as claimed in claim 13 further comprising a step of securing an adapter flange to the second mandrel using a fourth threaded union.
15. (Previously amended) A method of completing a low-pressure well after a conductor assembly has been installed in the ground above a subterranean hydrocarbon formation, the method comprising steps of:

 landing a wellhead onto the conductor assembly, the wellhead securing and suspending a surface casing in the well;

 securing a casing mandrel to the wellhead using a first threaded union, the casing mandrel securing and suspending a production casing in the well;

 securing a tubing head spool to the casing mandrel using a second threaded union; and

 securing a tubing hanger to the tubing head spool using a third threaded union, the tubing hanger securing and suspending a production tubing in the well.
16. (Original) The method as claimed in claim 15 further comprising the step of securing an adapter flange to the tubing hanger using a fourth threaded union.
17. (Original) The method as claimed in claim 15 further comprising steps of:

 after the step of securing the casing mandrel to the wellhead, securing a frac stack to the casing mandrel using a fourth threaded union, the frac stack having conduits for conveying proppants and pressurized fluids into the production casing for fracturing the subterranean hydrocarbon formation; and

 prior to the step of securing the tubing head spool to the casing mandrel, removing the frac stack from the casing mandrel.
18. (Previously amended) The method as claimed in claim 17 wherein the step of securing the frac stack using the fourth threaded union further comprises the steps of:

 securing a frac stack adapter flange to an underside of the frac stack; and

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securing an adapter pin to the casing mandrel, the adapter pin having pin threads for engaging box threads of the frac stack adapter flange.

19. (Previously amended) A method of installing and completing a low-pressure wellhead system for the extraction of hydrocarbons from a subterranean hydrocarbon formation, the method comprising the steps of:

digging away earth above the subterranean hydrocarbon formation to accommodate a conductor;

installing a conductor window on the conductor;

running surface casing until a wellhead is seated above the conductor;

cementing the surface casing in place;

removing the conductor window to expose the wellhead;

mounting a blowout preventer and drilling flange to the wellhead using a first threaded union;

inserting a test plug into the wellhead system to test a pressure-integrity of the wellhead system;

removing the test plug after the testing of the pressure-integrity of the wellhead system is complete;

installing a wear bushing in the drilling flange;

drilling a bore to accommodate a production casing;

running in the production casing until a casing mandrel connected to a top end of the production casing is seated in a casing bowl of the wellhead;

cementing in the production casing;

removing the blowout preventer and drilling flange;

securing the casing mandrel to the wellhead using a second threaded union;

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securing a tubing head spool to the casing mandrel using a third threaded union;
running in a production tubing until a tubing hanger is seated in the tubing head spool;
and
securing the tubing hanger to the tubing head spool using a fourth threaded union.

20. (Original) The method as claimed in claim 19 further comprising a step of securing an adapter flange to the tubing hanger using a fifth threaded union.
21. (Previously amended) The method as claimed in claim 20 further comprising steps of:
after the step of securing the casing mandrel to the wellhead, securing a frac stack to the casing mandrel using a fifth threaded union, the frac stack having conduits for conveying proppants and pressurized fluids into the production casing for fracturing the subterranean hydrocarbon formation; and
prior to the step of securing the tubing head spool to the casing mandrel, removing the frac stack from the casing mandrel.
22. (Previously amended) The method as claimed in claim 20 further comprising securing flow control equipment to the adapter flange.
23. (Previously amended) The wellhead system as in claim 1, wherein each said tubular string is suspended by a respective said mandrel by a threaded connection between the tubular string and the respective mandrel.
24. (Currently amended) A wellhead system for stimulating and extracting subterranean hydrocarbons from a low-pressure well, the system comprising:
a conductor assembly installed above a subterranean hydrocarbon formation;
a first tubular head supported by the conductor assembly;
a first tubular string suspended in the well by threaded connection to the a first mandrel;
a second tubular head supported by the first tubular head;

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a second mandrel secured to the second tubular head by a threaded union; and

a second tubular string suspended in the well by threaded connection to the second mandrel.

25. (Previously presented) The wellhead system as claimed in claim 24 wherein the second tubular head is secured to the first mandrel by a threaded union.